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(54) Benævnelse: **Plade og beholder, som er forsynet med en sådan plade**

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US-A- 4 165 017
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US-A1- 2007 108 208

DESCRIPTION

[0001] The present invention relates to a panel, to a container body provided with such panel and to a container provided with such panel.

[0002] A panel is used for closing a container. Such panel if often provided with a tab for forming an opening in the container and thereby providing access to the content of the container. The tab is thereto attached to the panel. The attachment may be by via soldering or gluing but generally via a rivet. The rivet may be a separate element or formed from and is integral with the panel.

[0003] The tab comprises a rear tab part, a front tab part and a central tab part at which central tab part the tab is attached to the panel. The rear tab part is to be gripped by the user and to be lifted for forming the opening in the panel. The lifting of the rear tab part results in a pressing action of the front tab part onto the panel and the formation of an opening in the panel along a score formed in the panel.

[0004] The construction and the form of the panel may be such that the rear tab part is either in contact or at some clearance or distance from the panel surface.

[0005] The panel is mounted on the container (body) after filling. The filled and closed container may be subjected to a heat or sterilization treatment. The heating of the container will result in a pressure increase and bulging of the panel. This bulging may result in a lifting of the rear tab part from the panel surface, or if there is already a clearance between the front tab part and the panel surface, in an increase of the clearance or distance. US 4165017 discloses a panel according to the preamble of claim 1.

[0006] Applicant has been confronted with situations wherein such clearance between the rear tab part and the panel has resulted in an engagement or hooking of external can structures behind the rear tab part. Such external can structure may be another panel hooking with a panel peripheral edge or the rear tab part of the other panel. In case of filled cans the external structure may be a container body rim or the upstanding rear tab part of anther container, such as during a heat treatment. Also in case the penal connected to a container body prior to filling similar hooking problems could occur.

[0007] The present invention has for its object to provide a panel for which there exists substantially no risk for the above described engagement or hooking when the rear tab part is at some distance from the panel surface either as separate panels or as panels mounted on a container body or as part of a filled container. Still such panel should manufactured with standard manufacturing means, generally not requiring additional tools and not interfering with the production and with the function of the panel particularly with the gripping and lifting of the rear tab part for opening the container.

[0008] This objective is met by the present invention with the provision of a panel according to claim 1.

[0009] The present invention is based on the insight that by providing means that prevent an external can structure to penetrate into the clearance or space between the rear tab part and the panel surface that the hooking problem is substantially, if not fully, avoided. Thus, the prevention means extend in front of the clearance or also beneath the clearance. Under all circumstances in a manner that the external can structure cannot engage with the tab rear part. Since the prevention means do not extend outside of the (theoretical) envelope of the panel, there will be substantially no interference in the manufacturing process of the panel and not in the manufacture of the can.

[0010] Preferably the prevention means comprise at least one emboss extending at least adjacent and preferably also beneath the rear tab part. Such an emboss can be formed with standard tools into the panel surface during its manufacture. Even before or after connecting the tab to the panel. The emboss is shaped and arranged such that external can structures, in particular other tabs or can rims and can edges cannot engage with the rear tab part. If such requirement cannot or less reliably met with one emboss, then it is foreseen the application of more than one emboss.

[0011] According to the invetion the prevention means comprise at least two embosses extending spaced apart sidewise, thus adjacent and preferably also beneath of the rear tab part. When using two embosses spaced apart with an opening between the two embosses and free end of the rear tab part and the panel surface, this opening allows for a finger access for gripping the rear tab part.

[0012] Obviously, the spacing between the two embosses is selected in view of external can structure. The spacing may be smaller for sharp forms of other tabs, and wider for curved parts of the can body and can, such as rims and peripheral edges. Accordingly, it is preferred that the spacing between the two embosses is such that the external can structure cannot penetrate

beneath the rear tab part, but allowing finger access.

[0013] In order to avoid engagement or hooking of an external can structure with the rear tab part, it is preferred that either the emboss or an emboss part extending adjacent the rear tab part extends over a height at least equal to the height of the underside of the rear tab part or the emboss or an emboss part extending adjacent the rear tab part extends over a height maximally equal to the height of the upper side of the rear tab part. Accordingly any penetration of an external can structure beneath the rear tab part and the panel surface is obstructed by the dimension of the emboss or emboss part.

[0014] As indicated here and before the production of the panel or the production of the filled can may be such that the clearance or distance in between the rear tab part and the panel surface is not constant but may change during the manufacture of the panel or after the filling and closing of the can. Accordingly, the height of the rear tab part underside or rear tab part upper side is the relevant height during, production, filling, cooking, and storage of the panel and/or the can. The height of the emboss or emboss part is therefore adjusted to the maximum height the rear tab part may have during the production of the panel and/or after the closure of the can.

[0015] As indicated here and before the rear tab part may be gripped by a finger of the user via an opening which is generally present in the rear tab part. Evidently, gripping of the rear tab part may be improved or desired by the user not only via this rear tab part opening but also via the free end of the rear tab part. Accordingly, it is preferred that the free end of the rear tab part the panel is provided with an indent thereby forming a finger access.

[0016] According to another aspect the invention also relates to a container body provided at the container body end via a peripheral panel edge with a panel with a panel as described here and before.

[0017] Still, according to another aspect the invention relates to a container comprising a panel and/or container body as described here and before. Such a container being filled and closed with a panel according to the invention, may have a clearance between the rear tab part and panel, but still any engagement or hooking with an external can structure is avoided. Such a clearance may preferably be formed by a negative pressure difference between the inner pressure and the outer pressure there is a clearance between the rear tab part and the panel.

[0018] Mentioned and other features of the present invention will be further discussed and illustrated by the following description of several embodiments of the present invention without the intention to restrict the invention to these embodiments. In this respect reference will be made to the annex drawings wherein:

figure 1 is a perspective view of a panel according to the invention;

figure 2 is a top view of the panel of figure 1;

figures 3A and 3B are cross-sections of the line III-III of figure 2 of various stages of the panel according to the invention;

figures 4, 6, and 8 are top views of other panels;

figures 5, 7, and 9 are cross-sections of the panels shown in figures 4, 6, and 8, respectively;

figure 10 is a top view of still another embodiment of a panel according to the invention; and

figure 11 is a perspective view of a panel according to the invention mounted on a container body.

[0019] Figure 1 discloses a panel 1 according to the invention. The panel 1 comprises a peripheral edge to be connected to a container body (see figure 13) of a container. A tab 4 is connected to the panel 1 via a rivet 5 which is located in the central part 6 of the tab 4. The tab 4 further comprises a front tab part 7 located near a score line 8. The score line 8 has a circular form extending between the peripheral edge 2 and a central panel part 9 to be removed by actuating and pulling the tab 4.

[0020] The tab 4 further comprises a rear tab part provided with a tab opening 11. The rear tab part 10 is intended to be gripped by the user of the can. The tab 4 is generally gripped with two fingers via the tab opening 11 and the free end of the rear tab part with two fingers, or by extending with one finger via the tab opening, or by penetrating beneath the free end 12 of the tab 4 with one finger.

[0021] Lifting of the rear tab part 10 will result in a contact of the front tab part near or at the score line 8 thereby popping the

score open and forcing an opening. Ultimately by lifting and pulling the tab 4 and moving it upwardly the central panel part 9 will be removed and an opening formed defined by the score line 8.

[0022] As shown in figure 1, the central panel part 9 has a terrace structure having an outer terrace 13, an intermediate terrace 14, and a central terrace 15.

[0023] The panel 1 according to the invention is provided with prevention means 16 for preventing engagement of hooking of an external can structure with the rear tab part. Thereto, the prevention means 16 have the form of 2 elongated embosses 17 and 18 extending spaced apart sidewise of the rear tab part 10. The spacing 19 between the two embosses 17 and 18 is such, that an external can structure is not having such sharp or pointed structures that it could penetrate between the two embosses 17 and 18 into the spacing 19.

[0024] The panel 1 is further provided in the central terrace 15 with an indent 20 forming a finger access to be used by the consumer when gripping the free end of the rear tab free end 12 of the rear tab part 10 of the tab 4.

[0025] As shown in figure 2, the embosses 17 and 18 have an elongated and curved structure which aligns with the outer form of the rear tab part 10.

[0026] Figure 3A shows that the two embosses 17 and 18 extend adjacent (not beneath) the rear tab part 10. The height h of the embosses 17 and 18 is such that they are extending over height which is larger than the height of the underside of the rear tab part during production filling cooking and storage. In this respect it is noted that figure 3A shows the panel in its original shape during manufacture during which the rear tab part 10 lies on the surface 21 of the central terrace 15. However, after filling and closure of the panel 1 onto the container, as shown in figure 3B, then the free end part 10 is extending above the surface 21 leaving a clearance between the free end part 10 and the surface 21. Still, penetration of any external can structure is avoided because the embosses 17 and 18 still extend above the underside of the rear tab part 10 and prevent such penetration.

[0027] Figures 4 and 5 show another panel 25 according to the invention. It is noted that constructural features similar or identical to those of panel 1 as described in figures 1-3 will be referenced by the same reference number.

[0028] In this case the terrace 15 is provided with embosses 26 and 27 extending adjacent and beneath the free end part 10 of the tab 4. The embosses 26 and 27 have an elongated and curved structure adapted to the structure of the free end part 10. As shown more clearly in figure 7, the embosses 26 and 27 comprise an outer emboss part 28 extending adjacent to the rear tab part 10, and an emboss part 29 extending beneath the rear tab part 10. Thus, the rear tab part is nested in the embosses 26 and 27. Again, the spacing between the embosses 26 and 27 is such that hooking or engagement with an external can structure is avoided. Also is avoided a hooking or engagement along the lateral part of the rear tab part 10.

[0029] Figures 6 and 7 show another panel 30. The panel 30 comprises prevention means 16 according to the invention which have the form of dimples 31 (in total 8) extending adjacent to and along the rear tab part 10 of the tab 4. The height h of the dimples 31 is larger than the height of the underside of the rear tab part 10 but smaller than the height of the upper side of the rear tab part 10. Still, penetration of an external can structure is avoided along the entire outer circumference of the rear tab part 10. Obviously, and similar to the embodiments shown in figures 1-7, the two middle dimples 31 should be removed in order to improve the finger access in accordance to the invention. Also, the dimples 31 may not only extend adjacent to the rear tab part 10 but may extend also only beneath the rear tab part, or both beneath and adjacent to the rear tab part 10. Still, under all situations the prevention means 16 avoid the engagement or hooking of the external can structure beneath rear tab part 10 of the tab 4. As shown in figure 8, the indent 32 extends only within the opening 11 of the tab and beneath the free end 12 of the rear tab part 10.

[0030] Figures 8 and 9 show another panel 33. In this case, the panel 33 is provided with prevention means 16 in the form of an emboss 34 which is elongated and curved in shape, such that the emboss 34 extends generally and substantially along the rear tab part 10 inclusive the free end 12.

[0031] Figure 10 shows another panel 35 according to the invention. The panel 35 is provided in the central terrace 15 with prevention means 16 having the form of an emboss 36 which is curved and elongated, a emboss 37 having the form of a dimple 37, and an emboss 38 which is short elongated and straight. Still, the embosses 36-38 extend along the rear tab part 10 adjacent or at its outside. Between the embosses 36 and 37 is a spacing 39 allowing for a finger access where is also provided an indent 40. It is noted that the prevention means 16 are asymmetrical such that the finger access 41 is also asymmetric which may be elegant for promotion or particular advertisements such as pictures or illustrations formed in at least the central part 15.

[0032] Finally, figure 11 shows the panel 1 mounted with its peripheral edge 2 on a container body 3. The container body 3 may have a bottom or may be without a bottom. With bottom it forms a container according to the invention, and without a bottom allows the filling of the container and subsequently closing the container after having been filled with a (non shown) bottom.

[0033] The skilled will appreciate that the panel according to the invention is primarily made of metal, such as aluminum, steel and tinplate. But also suitable plastics or combination of plastic elements and metal elements are in principle suitable. Also the diameter and the thickness of the panel may be selected within wide ranges as long as the function and suitability is not hampered. Thus, a panel diameter in the range of 20-180mm, such as 35 to 120mm, like 96mm is suitable. The thickness dependent on the type of material may be in the range of 0.10 to 2mm, such as 0.18 to 1mm or 0.22 to 0.8mm.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US4165017A **[0005]**

Patentkrav

1. Plade (1, 22, 25, 30, 33), som har en perifer kant (7), som kan forbindes med et beholderlegeme (3) i en beholder, og en flig (4), som er forbundet med pladen (1), og som har en central fligdel (6), hvilken flig (4) omfatter en forreste fligdel (7) og en bageste fligdel (10), som tjener til at kunne gribes og, idet man løfter den bageste fligdel (7), danne en åbning i pladen i ved hjælp den forreste fligdel (7), og hvor pladen (1) er forsynet med forhindringsorganer (16) til forhindring af, at en ydre dåsestruktur kan bringes til anlæg mod den bageste fligdel (10), og hvor der findes mindst et fremspring (17, 18), som strækker sig i det mindste ved siden af den bageste fligdel (10), og strækker sig i en højde, som mindst er lig med højden (4) af undersiden af den bageste fligdel (10), **kendetegnet ved, at** forhindringsorganerne (16) omfatter mindst to fremspring (17, 18), som strækker sig adskilt til siden for den bageste fligdel (10), og at et rum (19) mellem de to fremspring (17, 18) er således valgt, at den ydre dåsestruktur ikke kan trænge ind under den bageste fligdel (10), men tillade adgang for en finger (41) til at gribe den bageste fligdel (10), ved at fingeren trænger ind under den bageste fligdel (10), og at fremspringene (17, 18) strækker sig ved siden af den bageste fligdel (10), idet de har en højde, som mindst er lig med højden (h) af undersiden af den bageste fligdel (10).

2. Plade (1, 22, 25, 30, 33) ifølge krav 1, hvor et fremspring (28, 29) også strækker sig under den bageste fligdel (10).

3. Plade (1, 22, 25, 30, 33) ifølge ethvert af kravene 1 eller 2, hvor fremspringet (17, 18) eller en del (28, 29) heraf, som strækker sig ved siden af den bageste fligdel (10), maksimalt strækker sig i en højde, som er lig med højden (h) af oversiden af den bageste fligdel (10).

4. Plade (1, 22, 25, 30, 33) ifølge ethvert af kravene 1-3, og hvor højden af den bageste fligdels (10) underside eller den bageste fligdels overside er maksimumshøjden (h) under fremstilling, fyldning, kogning og opbevaring af pladen (1) og/eller dåsen.

5. Plade (1, 22, 25, 30, 33) ifølge ethvert af kravene 1-4, og hvor det neden under den frie ende af den bageste fligdel gælder, at pladen har en indskæring (20, 32, 40), hvorved der dannes en adgang (41) for en finger.

6. Beholderlegeme (31), som har en beholderlegeme-ende og dette via en perifer pladekant på en plade (1, 22, 25, 30, 33) ifølge ethvert af kravene 1-5.

7. Beholder, som omfatter en plade (1, 22, 25, 30, 33) ifølge ethvert af kravene 1-5 og/eller et beholderlegeme (3) ifølge krav 6.

8. Beholder ifølge krav 7, hvor der er en frigang mellem den bageste fligdel (10) og pladen (1, 22, 25, 30, 33).

9. Beholder ifølge krav 7 eller 8, og hvor det ved en negativ trykforskel mellem det indre tryk og det ydre tryk gælder, at der er en frigang mellem den bageste fligdel (10) og pladen (1, 22, 25, 30, 33).

DRAWINGS

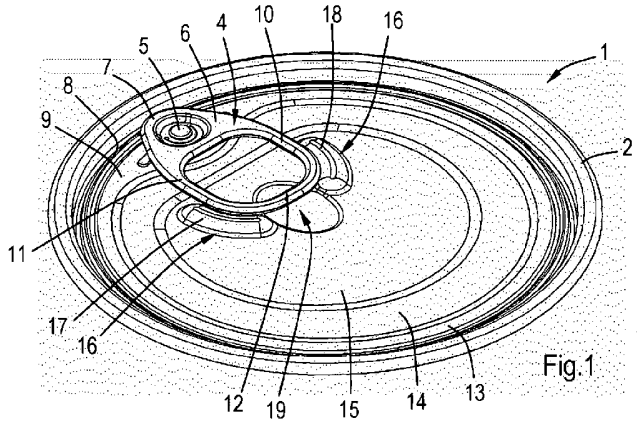


Fig.1

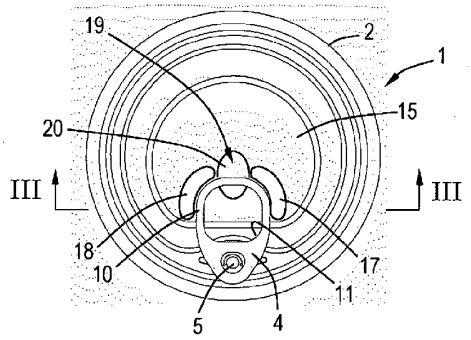


Fig.2

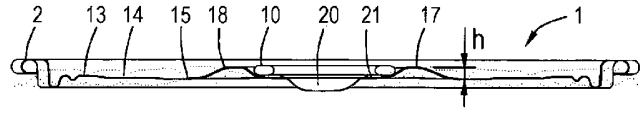


Fig.3A

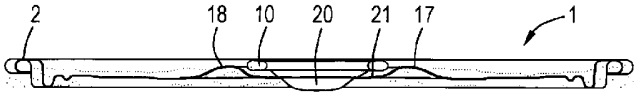


Fig.3B

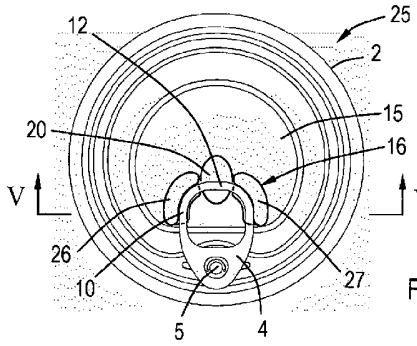


Fig.4

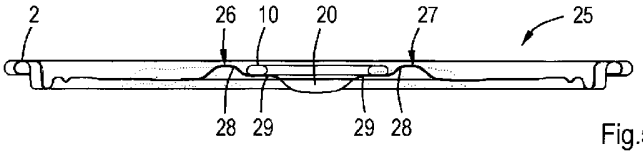


Fig.5

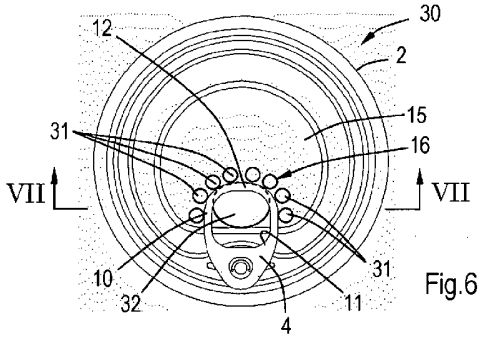


Fig.6

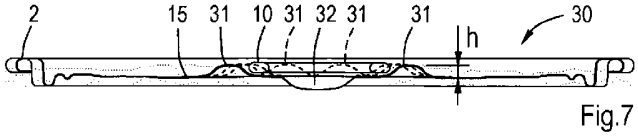


Fig.7

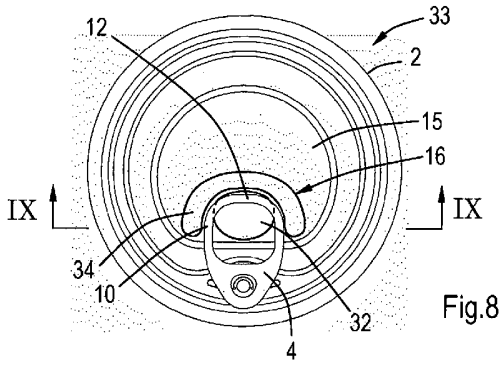


Fig.8

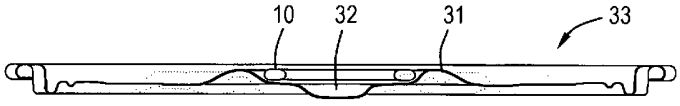


Fig.9

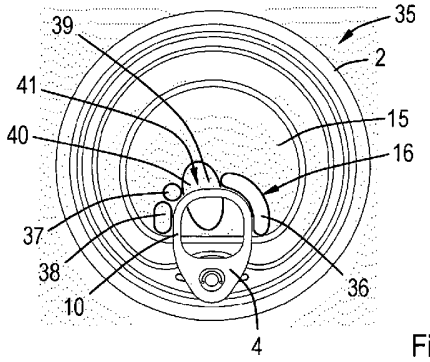


Fig.10

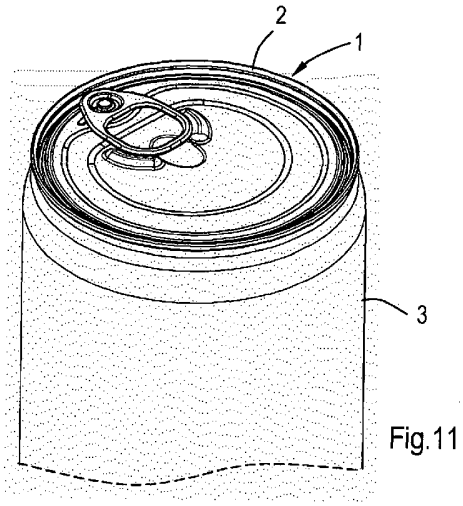


Fig.11